



Pea Island National Wildlife Refuge . . .

PEA ISLAND NATIONAL WILDLIFE REFUGE

September 2000

**Mike Bryant, Project Leader
Bob Glennon, Resource Conservation Planner
D.A. Brown, Habitat Protection Planner**

. . . a refuge in transition



Pea Island National Wildlife Refuge . . .

AUTHORITIES AND LIMITATIONS. . .

- **ESTABLISHED IN 1938 BY EXECUTIVE ORDER 7894 AS A REFUGE AND BREEDING GROUND FOR MIGRATORY BIRDS AND OTHER WILDLIFE....**
- **PRESIDENTIAL PROCLAMATION 2284 CLOSED 25,700 ACRES TO MIGRATORY BIRD HUNTING**
- **NPS OVERLAY ON THE REFUGE MAKES NPS MANDATES AN ADDITIONAL CONSIDERATION**

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Pea Island National Wildlife Refuge . . .

WILDLIFE . . .

- **MIGRATORY BIRDS**

- Waterfowl
- Shorebirds
- Wading Birds
- Land Birds

- **MARINE MAMMALS**

- **THREATENED & ENDANGERED SPECIES**

- Piping Plover
- Sea turtles
- Seabeach amaranth

- **INTER-JURISDICTIONAL FISH**

- Marine/Anadromous/Catadromous/Inland
- U. S. Fish & Wildlife Service, National Marine Fisheries Service, N. C. Division of Marine Fisheries, N. C. Wildlife Resources Commission



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Pea Island National Wildlife Refuge . . .

WILDLIFE MONITORING . . .

- **POPULATION MONITORING**
 - Shorebirds
 - Waterfowl
- **SEA TURTLE MONITORING**
 - Nesting
 - Strandings
- **MARINE MAMMAL STRANDINGS**
- **PROTECTION OF BIRD NESTING SITES**
 - Piping plover
 - Terns
 - American oystercatcher & others
- **MONITORING EFFECTS OF DREDGING & DISPOSAL**



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Pea Island National Wildlife Refuge . . .

HABITAT DIVERSITY . . .

- **25,700-ACRE SOUND WITH 5900-ACRE BARRIER ISLAND**
 - **salt marsh (1750 acres)**
 - **sound-side islands (166 acres)**
 - **man-made impoundments (940 acres)**
 - **estuarine flats & ponds (177 acres)**
 - **sand ridge/grassland (260 acres)**
 - **barrier dune (518 acres)**
 - **ocean beach (242 acres)**
 - **maritime scrub/shrub (649 acres)**
 - **sand island shoals (60 acres)**
 - **Oregon Inlet groin and fill (55 acres)**

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Pea Island National Wildlife Refuge . . .

HABITAT MANAGEMENT . . .

● ACTIVE

- 940 acres of of impoundments with water management
- 1,500 acres of prescribed fire in marsh and maritime shrub on a three-year rotation
- Impoundment dike maintenance

● PASSIVE

- NCDOT Mitigation Ponds
- NCDOT Wetland Mitigation Site
- Salt Flats



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Pea Island National Wildlife Refuge . . .

PEOPLE . . .

- Fishing
- Wildlife Observation
- Interpretation
- Education
- Photography

and . . .
non-wildlife dependent
activities like surfing
and beachcombing



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Pea Island National Wildlife Refuge . . .

RESOURCE PROTECTION . . .

● ADMINISTRATION

- Facilities (8.4 acres)

● EASEMENTS

- 158 acres highway right-of-way
- 79 acres utilities rights-of-way

● INHOLDINGS

- 10 acres - old Coast Guard Station owned by Dare County



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Pea Island National Wildlife Refuge . . .

PEA ISLAND NWR COMPREHENSIVE CONSERVATION PLAN

. . . a refuge in transition



Pea Island National Wildlife Refuge . . .

The Process to date . . .

- | | |
|---|--------------------|
| •Preplanning | March 2000 |
| •Biological Reviews | April 2000 |
| •Public Involvement
(see handouts) | June 2000 |
| •Issues Vision, Goals | July 2000 |
| •Alternative/Objective
Development | August 2000 |

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REFUGE VISION

GOALS

OBJECTIVES

Strategies

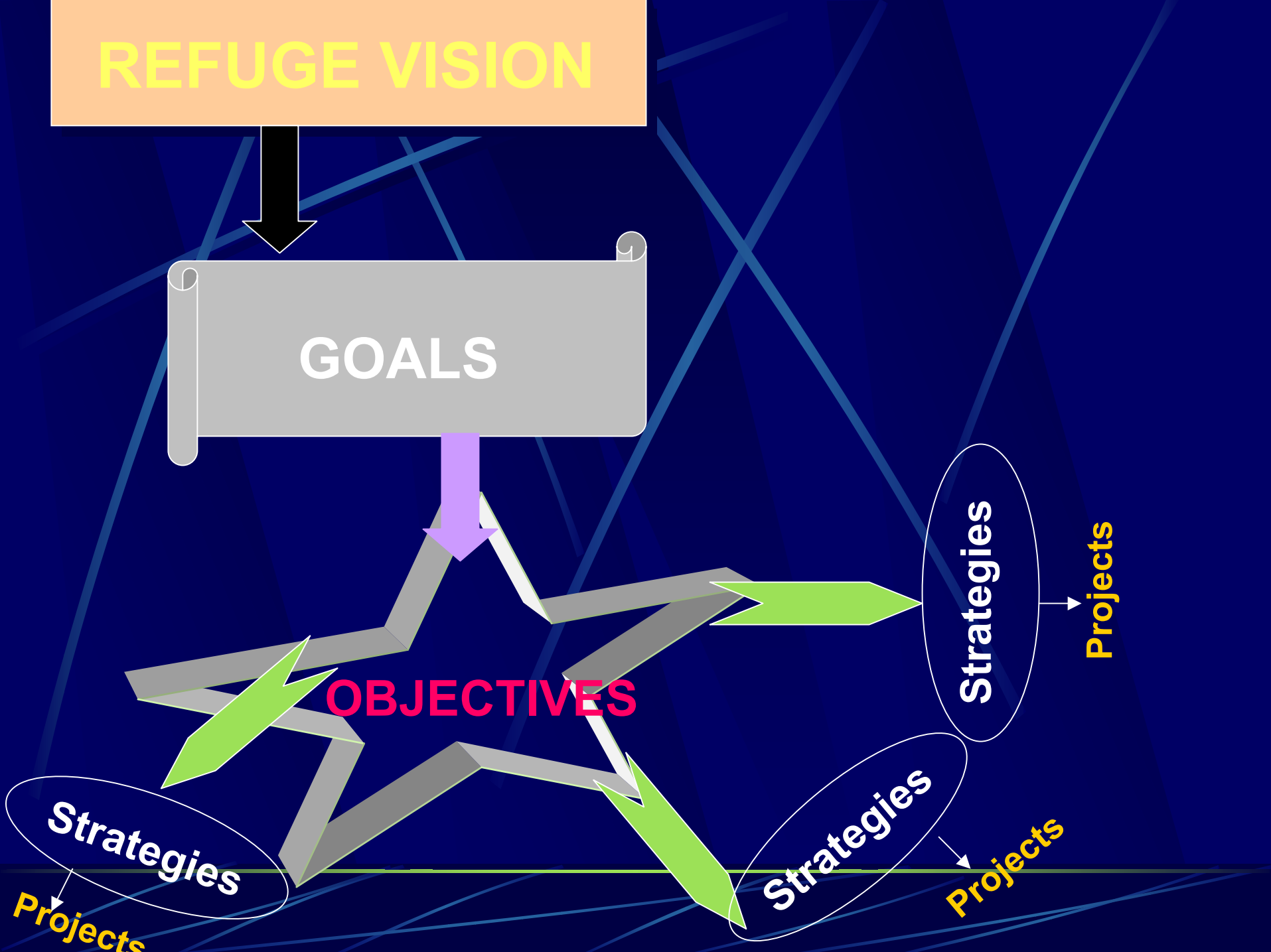
Projects

Strategies

Projects

Strategies

Projects





Pea Island National Wildlife Refuge . . .

3 Alternatives Derived from Public Involvement and Strategic Planning . . .

- 1. Existing conditions (status quo)**
- 2. Public issues and concerns, FWS internal minimum staffing needs exercise, and MMS**
- 3. Public issues and concerns, FWS internal optimum staffing exercise (RONS)**

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Pea Island National Wildlife Refuge . . .

ALTERNATIVE 1: No Action – Status Quo

- **no change from past management programs**
- **no changes to current uses**
- **no noticeable refuge program improvements**
- **limited public input in decision-making**

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Pea Island National Wildlife Refuge . . .

ALTERNATIVE 2: Enhanced Resource Protection and Public Use

- **more law enforcement and public use**
- **20% increase in public use and recreation visits**
- **increased maintenance activities**
- **wildlife and habitat programs unchanged**
- **increased resource protection**
- **increased visitor protection**
- **visitor experience improved considerably**
- **some public concerns addressed**

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Pea Island National Wildlife Refuge . . .

ALTERNATIVE 3: Enhanced Wildlife Program; Improved Resource Protection and Public Use

- emphasis on wildlife monitoring/management**
- increased levels of law enforcement**
- up to 50% increase in public use**
- increased outreach efforts**
- increased maintenance activities**
- increased resource protection**
- increased visitor protection**
- most public concerns addressed**

. . . a refuge in transition

GOALS

- Preserve, protect and maintain healthy and viable populations of migratory bird species (waterfowl, shorebirds, wading birds, land birds), threatened and endangered species, other priority wildlife, fish and plant species.**
- Provide high-quality mid-Atlantic coastal barrier island habitat with optimal diversity of plants and animals.**
- Provide safe, high quality opportunities for people to learn about and enjoy wildlife resources and habitats of the refuge and of the National Wildlife Refuge System.**
- Limit the adverse impacts of development to refuge resources and allow natural processes to dominate on candidate wilderness areas.**
- Acquire adequate funding and staff to accomplish the other refuge goals.**

VISION

Globally, barrier islands are fairly common sights. These geologic features usually run parallel to the shorelines of gently sloping, offshore bottoms. When natural processes such as weather and tides dominate, barrier islands migrate and change in size; they are land in perpetual motion. So, as existing habitat vanishes beneath shifting sands, new habitat appears almost overnight in this rapidly changing maritime environment. In mid-latitudes, warm temperate climates further enhance biological productivity. These forces of nature are the “furnace and forge” for a seasonal parade and assembly of wildlife uniquely adapted to this dynamic environment.

Coastal real estate development along the mid-Atlantic coast of North America has left few barrier islands in a relatively undeveloped condition. Pea Island National Wildlife Refuge in North Carolina is a rare example of the historic mid-Atlantic coastal barrier island - dynamic, vital, and mostly untamed. Established for the benefit of migratory birds and other wildlife, the 5,900-acre Pea Island is reserved as a refuge and breeding ground for hundreds of fish, wildlife and plant species. As a result of conservation management, native plant and animal communities follow their seasonal rhythms of life.

As development continues north and south of the refuge, the wild and managed habitats in the refuge will become increasingly critical for many fish, wildlife and plant species. Human visitors will migrate to Pea Island in greater numbers to witness its beauty and to seize the opportunity to explore. As more people visit the island, the refuge staff and volunteers will increase their presence throughout the refuge to ensure that biological integrity is maintained and visitors have a safe, pleasant and educational experience.

The staff and volunteers of Pea Island National Wildlife Refuge will assume a greater and more meaningful role in educating the visiting public. Refuge personnel will engage visitors in more education and interpretation opportunities than ever before, as public curiosity about this dynamic barrier island ecosystem mounts. There will be a growing responsibility to reach out to local and national communities about the refuge’s importance as a valuable piece of the puzzle that connects all wildlife habitats together.

Pressure from others will increase to use the refuge resources for maintenance of Oregon Inlet, NC Highway 12, and power and phone lines. Wildlife viewing will increase in popularity as unique, rare and threatened wild creatures continue to seek sanctuary on this barrier island refuge. Refuge staff and volunteers will be increasingly diligent in the conservation and management of fish, wildlife and plant species and their habitats in the face of rising human impacts. Of course, visitors will be encouraged to participate in compatible wildlife-dependent recreational activities. Working with others, Pea Island National Wildlife Refuge staff and volunteers will adaptively manage the refuge’s natural resources and create in this wild place a legacy of fish, wildlife and plants for everyone’s spiritual well-being and for future visitors to experience and enjoy.

ISSUES

Access by trail to west side of impoundments

Acquire/use water quality databases developed by agencies

All beach access issues (parking, use, signage)

Beach nudity/sexual activity

Birder access (boardwalks, overlooks, trails, dikes)

Communications towers (kill zones for migratory birds)

Consider pre-refuge human modifications to habitat

Cultural resources management

Deer management

Determine historic condition of habitat at Pea Island

Determine what types of habitats are desired

Economic impact of ecotourism on refuge

Funding constraints

Highway 12 Causeway/ Emergency Contingency Plans

Impact of beach use on shorebirds

Impact of development to refuge resources

Impacts of changes in ownership

Impact of natural process to refuge resources

Impacts of uses adjacent to the refuge

Interagency coordination is insufficient

Inventory of all wildlife species is inadequate



Alligator River National Wildlife Refuge

ALLGIATOR RIVER NATIONAL WILDLIFE REFUGE

October 2001

**Mike Bryant, Project Leader
Bob Glennon, Resource Conservation Planner
D.A. Brown, Habitat Protection Biologist**



Alligator River National Wildlife Refuge

ESTABLISHING AUTHORITIES. . .

- **Fish and Wildlife Act of 1956 provided basic authority provided the basic authority for the establishment and acquisition of the original 118,000 acres on the refuge. The Nature Conservancy brokered the donation of the original 118,000 acres by the Prudential Insurance Company**
- **The Migratory Bird Hunting Stamp Act of 1934 and Wetlands Acquisition Act of 1964 provided funds for acquisition and establishment of the remainder of the refuge**



Alligator River National Wildlife Refuge

Acquisition History

- **The original 118,000 acres of Alligator River National Wildlife Refuge were donated by The Prudential Insurance Company to the Fish and Wildlife Service in 1984. 6,000 of the original 118,000 on the west side of Alligator River were transferred to Pocosin Lakes National Wildlife Refuge in 1991.**
- **Since 1984, 40,195 acres were added to Alligator River National Wildlife Refuge to bring the current total to 152,195 acres**



Alligator River National Wildlife Refuge

Purposes . . .

Manage to protect and enhance the area's unique wetland habitats and their associated species

The Fish and Wildlife Act provided authority:

“... for the development, enhancement, management, conservation, and protection of fish and wildlife resources...”

“... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude...”



Alligator River National Wildlife Refuge

WILDLIFE SPECIES OF MANAGEMENT CONCERN

Migratory land birds of national or regional concern

Red-cockaded woodpecker

Black throated green warbler

Waterfowl

Marsh birds

Wading birds

Red wolf

Black bear

Anadromous fish

American alligator

State-listed reptiles and amphibians





Alligator River National Wildlife Refuge

HABITAT DIVERSITY . . .

152,195 acres of pocosins and other habitats
freshwater pools, lakes, and ponds (1,152 acres)
brackish marsh (25,204 acres)
managed wetlands (1,800 acres)
cropland (3,000 acres)
cypress-gum forest (1,300 acres)
Atlantic white cedar forest (8,468 acres)
mixed pine hardwood forest (11,380 acres)
non-alluvial hardwood forest (12,236 acres)
pond pine shrub pocosin (38,533 acres)
pond pine cane pocosin (30,400 acres)
high shrub pocosin (6,350 acres)
low shrub pocosin (12,292 acres)





Alligator River National Wildlife Refuge

HABITAT MANAGEMENT . . .

Fire management

- to protect against wildfire
- to enhance wildlife habitat

Forest management

- reforestation
- habitat improvement
- Atlantic white cedar restoration
- Southern pine beetle control

Mechanical and chemical control of noxious weeds





Alligator River National Wildlife Refuge

HABITAT MANAGEMENT . . .

Water management

- for waterfowl
- for natural hydrology

Moist soil management

- for waterfowl
- for marshbirds and other wildlife

Cooperative farming

- for diversifying wildlife foods





Alligator River National Wildlife Refuge

PEOPLE . . .

- Hunting
- Fishing
- Wildlife observation
- Wildlife photography
- Environmental education
- Environmental interpretation

Plus...facilities such as paddling trails, wildlife trails, wildlife drives, and kiosks

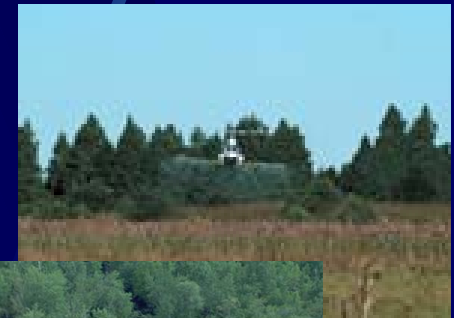




Alligator River National Wildlife Refuge

RESOURCE PROTECTION **(including land acquisition and monitoring** **of permitted activities) . . .**

- **Natural Heritage Areas**
 - **entire refuge land area**
- **Outstanding Resource Waters**
 - **Milltail Creek, Whipping Creek**
Swan Creek, Alligator River
- **Anadromous Fish Spawning Areas**
 - **Long Shoal River, East Lake,**
South Lake
- **Special use permits**
- **Highway, utility, and facility easements**
- **Pest plant and pest animal control**





Alligator River National Wildlife Refuge

LAW ENFORCEMENT ISSUES . . .

- **Hunting Blinds/Stand**s
- **Dumping/Littering**
- **Feeding/Baiting Wildlife**
- **Poaching**
- **Tree Cutting**
- **Trespass**
- **Unauthorized Vehicle Traffic**
- **Vandalism**
- **Target Practice**

(Law enforcement conducted as collateral duty by Alligator River personnel. No full-time LE officers at 150,000 acre+ Alligator River NWR. Like THAT makes any sense!)



Alligator River National Wildlife Refuge

ALLGIATOR RIVER NWR COMPREHENSIVE CONSERVATION PLAN



Alligator River National Wildlife Refuge

The Process to date . . .

- Preplanning** **March 2001**
- Biological Reviews** **December 1999**
- Public Involvement
(see handouts)** **June 2001**
- Issues, Vision, Goals** **August 2001**
- Alternative/Objective
Development** **September 2001**

REFUGE VISION

GOALS

OBJECTIVES

Strategies

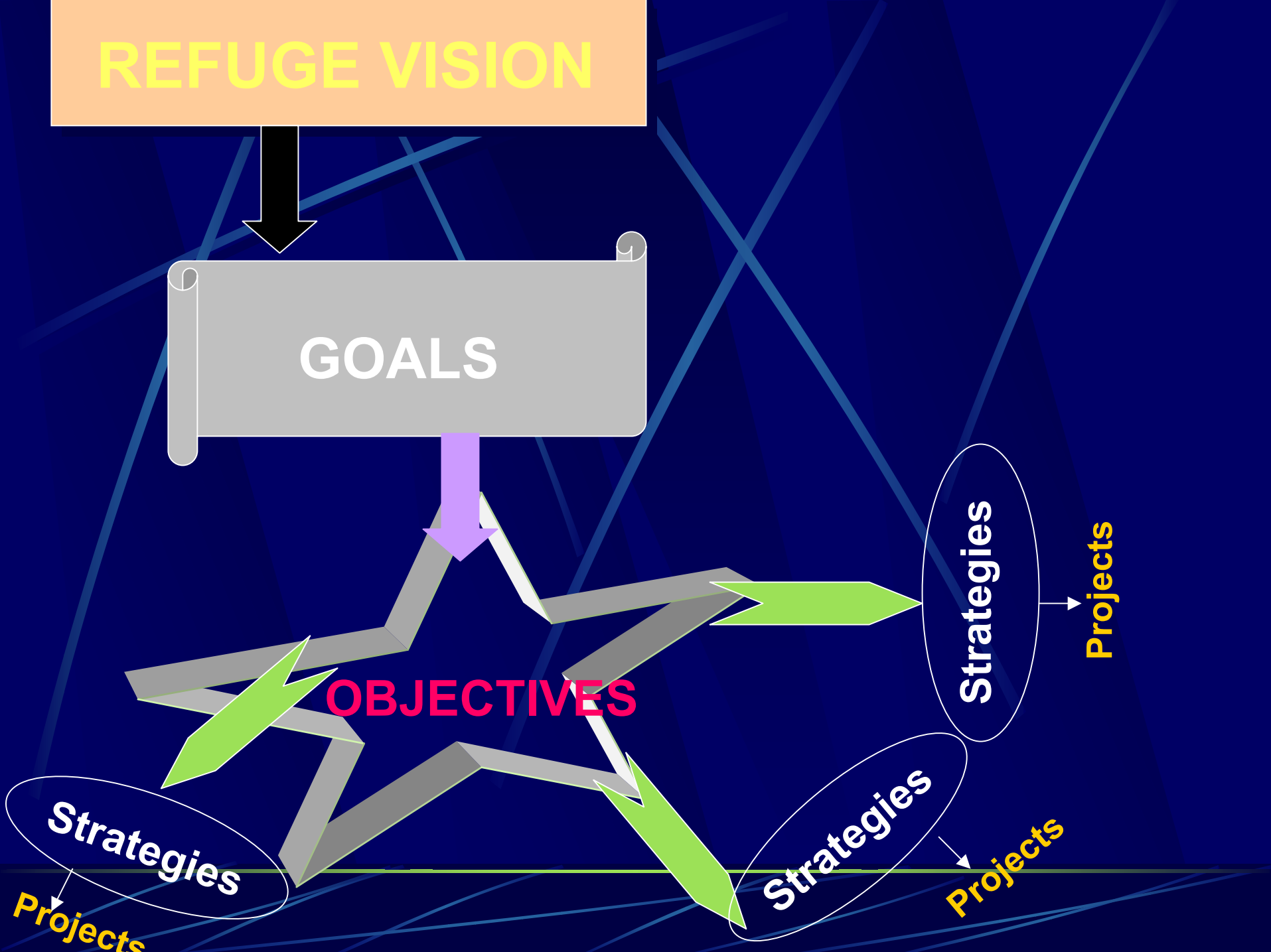
Projects

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Vision Statement

Alligator River National Wildlife Refuge's unique wetland habitats will become more critical for many wildlife, fish, and plants as eastern North Carolina is developed. Refuge habitats will be managed, enhanced, and restored for optimal diversity of wildlife, fish, and plants. Healthy and viable populations of threatened and endangered species, and other wildlife, fish, and plants will be managed and conserved.

People will visit this refuge in greater numbers to witness its subtle beauty and to seize the opportunity to explore. Refuge staff and volunteers will assume a greater role in educating the visiting public to ensure that biological integrity is maintained and that people have a safe, pleasant and educational experience. Visitors will be encouraged to participate in compatible, wildlife-dependent recreational activities.

The proposed Visitor Center will serve as a gateway, not only for adventure into Alligator River National Wildlife Refuge, but also to encourage the many visitors to the Outer Banks to venture inland to other local national wildlife refuges. There will be a growing responsibility to reach out to local and national communities about the refuge's importance as a valuable piece of the puzzle that connects all wildlife habitats together.

Working with others, Alligator River National Wildlife Refuge staff and volunteers will adaptively manage the refuge's natural resources and create in this wild place a legacy of fish, wildlife and plants for everyone's spiritual well-being and for future visitors to experience, enjoy and cherish.

GOALS

Wildlife, Fish and Plant Populations

Inventory, protect and manage to maintain healthy and viable populations of threatened and endangered species (red wolf, red-cockaded woodpecker, and others), other priority wildlife (black bear and others), fish, and plant species.

Habitat Management

Inventory and manage to provide diverse, high-quality mid-Atlantic coastal plain forested wetlands, marshes, aquatic habitats, and areas intensively managed for wildlife.

Public Use/Outreach

Provide safe, high quality opportunities for people to learn about and enjoy wildlife resources and habitats of the refuge and of the National Wildlife Refuge System.

Resource Protection

Limit the adverse impacts of development to refuge resources and allow natural processes to dominate on candidate wilderness areas.

Administration

Acquire adequate funding and staff to accomplish the other refuge goals.

WILDLIFE ISSUES FROM SCOPING MEETINGS

- **Consider wildlife first**
- **Control bear populations**
- **Describe life histories of species occurring on the refuge**
- **Discuss plant and wildlife species occurring on the refuge and focus on federally listed species and state-listed and sensitive species that may be of management concern**
- **Develop beaver management guidance**
- **Evaluate food chain impacts of fire ants on other species**
- **Evaluate the status of American elm on refuge between Milltail and Navy Shell Road**
- **Evaluate water management impacts to fish and wildlife on each refuge**
- **Increase study and protection of reptiles, amphibians, plants and invertebrates (inventory)**
- **Study deer population carrying capacities and determine whether hunting needs to be increased**

HABITAT ISSUES FROM SCOPING MEETINGS

- **Develop erosion and sediment control plans and best management practices for canal and road maintenance activities**
- **Discuss fire management in wilderness**
- **Evaluate impacts of daylighting practices on adjacent canal hydrology**

PUBLIC USE ISSUES FROM SCOPING MEETINGS

- **Add horseback riding as a priority public use**
- **Allow ORVs (ATVs, ATCs) on selected refuge areas**
- **Conduct comprehensive review of the road system across the refuge to balance the public use with ecological requirements**
- **Consider more refuge access**
- **Continue to allow dog hunting on the refuge**
- **Continue to allow horseback riding on the refuge**
- **Coordinate public uses to avoid user conflicts**
- **Develop a facility on mainland Dare County that is part of a cooperative multi-agency effort to educate the public and conduct research on the value and function of the types of wetlands**
- **Develop a program for dog hunting**
- **Discuss any future limitations on dog hunting thoroughly with public**
- **Expand areas available for dog hunting (Milltail Creek to Poplar Ridge)**
- **Increase programs for horseback riders**
- **Initiate working group meetings for dog hunters**
- **Make open areas practical for hunting**
- **Make sure hunting areas correspond to road closures, for accessibility**
- **Rotate hunting areas or distribute more evenly across landscape**
- **Work with dog hunters to maintain or improve relationships**

RESOURCE PROTECTION ISSUES FROM SCOPING MEETINGS

- Consider and evaluate the long-term costs and methods for acquiring land to create corridors**
- Control invasive species**
- Coordinate public uses with the Bombing Range (especially roads)**
- Determine whether easements could include transfer of rights (i.e. dog hunting) between refuge and landowner property**
- Determine whether fee-simple is more advantageous than easement purchase**
- Discuss what law enforcement means for the refuge in the plans**
- Evaluate distribution of noxious weeds and exotic species**
- Increase funding for law enforcement**
- Increase law enforcement staff**
- Make sure the conservation measure fits the wildlife requirements**
- Use combination of all conservation measures as they apply to each landowner**

WILDERNESS ISSUES FROM SCOPING MEETINGS

- **Avoid putting wilderness where popular commercial fish landings and deer hunting occur**
- **Avoid putting wilderness areas too close to populated areas**
- **Consider areas with ditches that could be restored**
- **Consider eastern wilderness act**
- **Consider smaller areas than 5,000 acres**
- **Discuss fire management in wilderness (in terms of safety, values to protect and staffing level requirements)**
- **Evaluate the impacts of wilderness designation on adjacent refuge uses**
- **Evaluate and discuss the impacts to wildlife in general**
- **Evaluate the impacts of jet noise on wilderness**
- **Review drainage easements for wilderness**



Alligator River National Wildlife Refuge

3 Management Alternatives Derived from Public Involvement and Strategic Planning . . .

- 1. Existing conditions (status quo)**
- 2. Moderate program increases**
- 3. Optimum program increases**



Alligator River National Wildlife Refuge

**ALTERNATIVE 1: No Action – Status Quo
(10.76 FTE Non-Fire and 8.05 FTE Fire)**



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**ALTERNATIVE 2: Moderate Program Increases
(16.41 FTE Non-Fire and 8.05 FTE Fire)**



Alligator River National Wildlife Refuge

**ALTERNATIVE 3: Optimum Program Increases
(39.21 FTE Non-Fire and 16.65 FTE Fire)**



Alligator River National Wildlife Refuge









ISSUES

Keep commercial fishing access at New Inlet

Law enforcement

Maintain fire as a tool

Vegetation management in highway 12 right of way

Monitor sediment and water quality in impoundments

Oregon Inlet jetties (direct and indirect impacts)

Outreach and education in general

Outreach and education on specific plants on refuge

Outreach on management issues

Outreach on regulations with realtors, tourist bureau, etc.

Parking for birder access

Public input into management (oral histories)

Refuge Entrance Signs

Rule signage

Sand fencing for Highway 12 maintenance

Sand management, budgets, renourishment, etc.

Other birds versus waterfowl impoundment management

Utility Right of Way

Visitor access (all types, impacts, resources, dikes)

Volunteer coordination

Water quality and water quality monitoring data